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ONE HUNDRED AND FIFTY-FIVE NEW DOUBLE STARS.

Lick Observatory Bulletin, No. 61, contains detailed measures of one hundred and fifty-five new double stars, numbered, in continuation of those previously published, A 646 to A 800.

More than one half of these pairs were discovered with the 12-inch telescope, but nearly all of the measures were made with the 36-inch.

Only two pairs whose components are separated by more that 5″ are included in this list, 116 pairs, or 75 per cent of the whole number, are separated by less than 2″, and 13 pairs are closer than 0″.25. The list includes two naked-eye stars, and closer components to five pairs catalogued by previous observers, viz.: Σ 1506, Σ 2588, h 1541, h 2027, and *Espin* (unnumbered).

The following table shows the classification by distance between the components of the 800 A. stars now published:—

Distance.	No. of Stars.	Per cent.
0″.00 to 0″.25	58	7.3
0 .26 " 0 .50	162	20.2
0 .51 " 1 .00	169	21.1
1 .01 " 2 .00	193	24.1
2 .01 " 5 .00	210	26.3
5 .01 " 5 .27	8	1.0

R. G. AITKEN.

September, 1904.

THE CROCKER ECLIPSE EXPEDITIONS IN 1905.

(The following announcement by Director CAMPBELL was made in *Lick Observatory Bulletin*, No. 59.)

The next observable total solar eclipse occurs on August 30, 1905. It is remarkably well situated, and is looked forward to with great interest. The shadow path begins at sunrise south of Hudson Bay, enters the Atlantic Ocean a short distance north of Newfoundland, crosses northeastern Spain, northeastern Algiers, and northern Tunis, passes centrally over Assuan on the Nile, and ends at sunset in northeastern Arabia. The durations on the coast of Labrador, in Spain, and at Assuan are two and one half, three and three fourths, and two and three fifths minutes, respectively.

The interval of two hours and one half between the instants of totality in Labrador and Egypt offers an unusual advantage for obtaining large-scale photographs of the solar corona, with a view to determining changes in the forms and positions of the delicate details of structure. The opportunity to bring the search for intermercurial planets to a satisfactory conclusion is also exceedingly promising. Should a new planet be observed at three stations, the interest attaching to its discovery would be heightened by the fact that its approximate orbit could be determined at once. If no planets are revealed, on good photographs, the negative results would be scarcely less valuable though certainly less interesting than positive results, and the intramercurial planet question would cease to be a pressing eclipse problem.

In Spain, the high altitude of the eclipsed Sun, and the promising weather conditions, are also very favorable for polarigraphic, spectrographic, and other investigations.

An important element in the success of eclipse observations consists in the opportunity to prepare the instrumental equipment, and the program and methods of observation, well in advance, in order that critical tests may be applied to them before the expeditions depart for their observing stations.

It is a pleasure to announce that Mr. WILLIAM H. CROCKER has again shown his interest in the science of astronomy by offering to meet the expenses of expeditions to be sent from the Lick Observatory to Labrador, Spain, and Egypt, to secure observations of the 1905 eclipse.

The provisional program for the three stations is, in the main, as follows:—

LABRADOR.

A photographic search for intramercurial planets in a region of the sky 8½° wide, extending in the direction of the solar equator from 4° below the Sun to 15° above it.

The photography of the corona by means of a camera of five inches aperture and forty feet focus, of the form first used by Professor SCHAEBERLE at the eclipse of 1893.

SPAIN.

A photographic intramercurial search covering a region 9¼° wide, extending in the direction of the solar equator from 14° below to 14° above the Sun.

The photography of the solar corona with a camera of five inches aperture and forty feet focus.

A study of the polarized light in the corona.

The use of spectrographs provided with moving plate-holders to obtain a continuous record of changes in the spectrum of the Sun's edge at the time of second and third contacts; of spectrographs for determining the wave-length of the green coronal bright line, and, if possible, the wave-lengths of the bright and dark lines in the isolated spectrum of the Sun's edge, as nearly as possible at the time when the dark lines give way to bright ones, and *vice versa;* and of a spectrograph for recording the general spectrum of the corona.

EGYPT.

A photographic intramercurial search 8½°, extending in the direction of the solar equator from 4° below to 15° above the Sun.

The photography of the solar corona with a camera of five inches aperture and forty feet focus.

The photography of the general spectrum of the corona.

THE PUBLICATION OF THE CROSSLEY REFLECTOR PHOTOGRAPHS OF NEBULÆ AND STAR-CLUSTERS.

(Announcement by Director CAMPBELL in *Lick Observatory Bulletin*, No. 59.)

The late Director KEELER's observing program for the Crossley Reflector included the photography of about one hundred of the principal nebulæ and star clusters. The portions of his program available for observation in our clear summer weather were practically complete at the time of his death; but those in position during the cloudy winter months, forming nearly a half of the whole, were incomplete. After the lamented death of Professor KEELER, Assistant Astronomer PERRINE, in charge of the Crossley Reflector, made it his first duty to complete the observing program. This was accomplished in September, 1903. The importance of prompt publication of this invaluable series of photographs has been fully realized, but difficulties, both technical and financial, have existed. Plans have recently been completed whereby it is hoped to issue, within the coming half-year, a volume of the *Lick Observatory Pub-*